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# Preliminary Science Flight Report

## Operation IceBridge Antarctica 2011



**Flight:** F16

**Mission:** Recovery Glacier – Downstream

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### Flight Report Summary

<b>Aircraft</b>	<b>DC-8 (N817NA)</b>
<b>Flight Number</b>	120120
<b>Flight Request</b>	128008
<b>Date</b>	Monday, November 7, 2011 (Z), Day of Year 311
<b>Purpose of Flight</b>	Operation IceBridge Mission Recovery Downstream
<b>Take off time</b>	11:54:00 Zulu from Punta Arenas (SCCI)
<b>Landing time</b>	23:49:29 Zulu at Punta Arenas (SCCI)
<b>Flight Hours</b>	12.0 hours
<b>Aircraft Status</b>	Airworthy.
<b>Sensor Status</b>	All installed sensors operational.
<b>Significant Issues</b>	None
<b>Accomplishments</b>	<ul style="list-style-type: none"><li>• Low-altitude survey (1,500 ft AGL) Recovery Glacier. Completed all planned survey lines.</li><li>• Collected additional data over Slessor Glacier and Bailey Ice Stream.</li><li>• ATM, MCoRDS, snow and Ku-band radars, gravimeter, and DMS were operated on the survey lines.</li><li>• Conducted two ramp passes (1000 ft AGL) at Punta Arenas airport after takeoff for DMS, ATM, snow and Ku-band radar instrument calibration.</li></ul>
<b>Geographic Keywords</b>	Recovery Glacier, Slessor Glacier, Bailey Ice Stream, Filchner Ice Shelf, Shackleton Range, Antarctica
<b>ICESat Tracks</b>	0226,0002,0305,0285,0097,1297.
<b>Repeat Mission</b>	None.

## Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
<b>ATM</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	38 GB	None
<b>MCoRDS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2 TB	None
<b>Snow Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	210 GB	None
<b>Ku-band Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	210 GB	None
<b>DMS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	63 GB	None
<b>Gravimeter</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2 GB	None
<b>DC-8 Onboard Data</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	40 MB	None

### Mission Report (Michael Studinger, Mission Scientist)

This flight is a new design. The intention is to map the grounding line and lower part of Recovery Glacier using all IceBridge low-altitude sensors, mainly along ICESat ascending and descending tracks. It also includes flight lines specifically targeted over several subglacial lakes. We completed 100% of the planned survey lines in good conditions, although we saw occasional blowing snow on the surface. We were able to extend the last survey line, which gave us a bonus crossing over the lower parts of Slessor Glacier and Bailey Ice Stream for bathymetry estimates over the Filchner Ice Shelf.

The known wildlife colonies in the survey area were at safe distance from the flight path of the DC-8.

### Individual instrument reports from experimenters on board the aircraft:

**ATM:** The ATM lasers worked well and collected good data along the entire survey line.

**MCoRDS:** The MCoRDS worked well.

**Snow and Ku-band radar:** The snow and Ku-band radars collected data along the entire line.

**Gravimeter:** Worked well. No issues.

**DMS:** DMS worked well. No issues.

**DC-8 on board data:** System worked well.

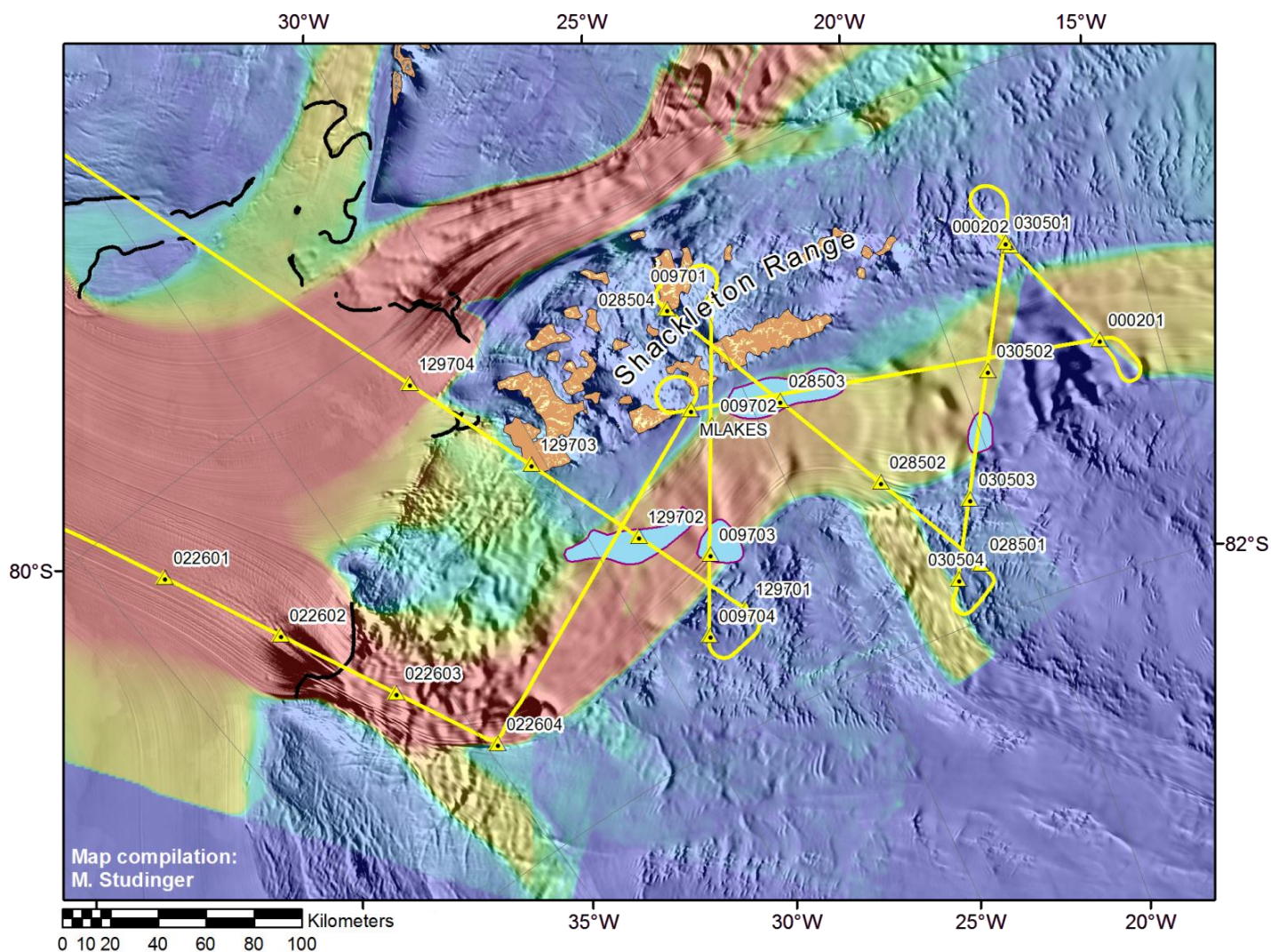


Figure 1: DC-8 trajectory over the Recovery Glacier. Subglacial lakes are indicated by blue outlines. Black line marks the grounding line. Background image is MODIS mosaic and ice surface velocity from InSAR.